

## APPENDIX Q

## USER DEFINED SCENARIOS

Scenario Name: blank BCVWD2

### STEP 1 Annual Costs Variable Values

Staff hours to administer the survey program	200.00
Staff hourly rate, including overhead	35.00
Field labor hours - SF Surveys	1,000.00
Field labor hours - MF Surveys	200.00
Field labor hourly rate, including overhead - SF Surveys	45.00
Field labor hourly rate, including overhead - MF Surveys	45.00
Unit cost of materials - SF Surveys	10.00
Unit cost of materials - MF Surveys	10.00
Number of Surveys - SF	500.00
Number of Surveys - MF	100.00
Program Marketing Cost	500.00
Program Advertising Cost	300.00
Program Evaluation Cost	2,000.00
Cost Share From Others	0.00

### STEP 2 Customer Water Savings

Reduction in Avg. Use - SF Surveys (gpd)	25.00
Reduction in Avg. Use - MF Surveys (gpd)	20.00
Savings Decay - SF Surveys (%/Yr)	20.00
Savings Decay - MF Surveys (%/Yr)	20.00

### STEP 3 Agency Benefits

Avoidable Supply Acquisition Cost	600.00
Avoided supply capacity expansion costs	696.00
Avoided wastewater capacity expansion costs	0.00
Total annual chemical costs	65,000.00
Annual fixed costs for chemicals	0.00
Annual unrelated chemical costs	0.00
Average annual treated water use	8,053.00
Annual energy costs	747,000.00
Annual fixed costs for energy	11,500.00
Annual unrelated energy costs	16,300.00
Environmental benefit per AF saved	0.00

### STEP 4 Other Benefits and Costs

Hot water use as a percent of total survey water savings - SF Surveys	15.00
Hot water use as a percent of total survey water savings - MF Surveys	20.00
Percent of residential hot water heated with gas - SF	92.00
Percent of residential hot water heated with gas - MF	92.00
Marginal cost per therm	1.30
Marginal cost per KWh	0.12
Avoided energy & chemical costs - other utility	125.00
Avoided wastewater capacity expansion - other utility	900.00
Average customer expenditures per survey - SF Surveys	25.00
Average customer expenditures per survey - MF Surveys	25.00

### STEP 5 Discounting Information

Agency Discount Rate (%/Yr)	2.50
Social Discount Rate (%/Yr)	2.50
Avoided cost of water and wastewater - escalation rate (%/Yr)	1.00
Environmental benefits - escalation rate (%/Yr)	0.00
Energy cost - escalation rate (%/Yr)	3.00

### STEP 6 Review Results

Net Present Value - Agency Perspective	36,804.06
Benefit-Cost Ratio - Agency Perspective	1.53
Net Present Value - Society Perspective	126,719.14
Benefit-Cost Ratio - Society Perspective	2.49

## BMP 01 Residential Surveys - Summary of Costs & Benefits

<b><u>Program Present Value Costs</u></b>	<b><u>Agency Perspective</u></b>	<b><u>Society Perspective</u></b>
1. Total surveys	600	600
2. Total water savings	80.9 AF	80.9 AF
3. Agency program costs	\$69,800	\$69,800
4. Customer program costs	NA	\$15,000
5. Cost share	\$0	NA
6. Net Program Cost	<u>\$69,800</u>	<u>\$84,800</u>
<b><u>Program Present Value Benefits</u></b>		
7. Agency supply & wastewater benefits	\$106,604	\$106,604
8. Environmental benefits	\$0	\$0
9. Customer program benefits	NA	\$26,495
10. Other utility benefits	NA	\$78,420
11. Total benefits	<u>\$106,604</u>	<u>\$211,519</u>
<b>12. Net Present Value</b> (Line 11 - Line 6)	<b>\$36,804</b>	<b>\$126,719</b>
13. Benefit-Cost Ratio (Line 11 ÷ Line 6)	1.53	2.49
14. Simple Unit Supply Cost (Line 6 ÷ Line 2)	\$863 /AF	\$1,048 /AF
15. Discounted Unit Supply Cost (Line 6 ÷ discounted water savings)	\$945 /AF	\$1,149 /AF

*This BMP is cost-effective to implement from the Agency Perspective*

*This BMP is cost-effective to implement from the Society Perspective*

**BMP B**  
**Residential Retrofits**

**USER DEFINED SCENARIOS**

<b>Scenario Name:</b>	<b>blank</b>	<b>BCVWD Baseline</b>	<b>BCVWD Reduced Cost</b>
<b>STEP 1 Annual Costs Variable Values</b>			
Staff hours to administer the retrofit program		100	100
Staff hourly rate, including overhead		35	35
Field labor hours (e.g. kit distribution, direct installation) - SF Distribution		-	-
Field labor hours (e.g. kit distribution, direct installation) - MF Distribution		-	-
Field labor hourly rate, including overhead - SF Distribution		45	45
Field labor hourly rate, including overhead - MF Distribution		45	45
Unit cost of materials - SF Kits		40	20
Unit cost of materials - MF Kits		25	20
Number of Kits - SF		250	250
Number of Kits - MF		50	50
Program Marketing Cost		500	500
Program Advertising Cost		100	100
Program Evaluation Cost		2,000	2,000
Cost Share From Others		-	-
<b>STEP 2 Customer Water Savings</b>			
Reduction in Avg. Use - SF Retrofit (gpd)		12	12
Reduction in Avg. Use - MF Retrofit (gpd)		10	10
Savings Decay - SF Retrofit (%/Yr)		40	40
Savings Decay - MF Retrofit (%/Yr)		40	40
Installation Probability - SF Retrofit (%)		55	55
Installation Probability - MF Retrofit (%)		55	55
<b>STEP 3 Agency Benefits</b>			
Avoidable Supply Acquisition Cost		600	600
Avoided supply capacity expansion costs		696	696
Avoided wastewater capacity expansion costs		-	-
Total annual chemical costs		65,000	65,000
Annual fixed costs for chemicals		-	-
Annual unrelated chemical costs		-	-
Average annual treated water use		8,053	8,053
Annual energy costs		747,000	747,000
Annual fixed costs for energy		11,500	11,500
Annual unrelated energy costs		16,300	16,300
Environmental benefit per AF saved		-	-
<b>STEP 4 Other Benefits and Costs</b>			
Hot water use as a percent of total water savings - SF Retrofits		15	15
Hot water use as a percent of total water savings - MF Retrofits		20	20
Percent of residential hot water heated with gas - SF		92	92
Percent of residential hot water heated with gas - MF		92	92
Marginal cost per therm		1	1
Marginal cost per KWh		0	0
Avoided energy & chemical costs - other utility		125	125
Avoided wastewater capacity expansion - other utility		900	900
Average customer expenditures per retrofit - SF		5	5
Average customer expenditures per retrofit - MF		5	5
<b>STEP 5 Discounting Information</b>			
Agency Discount Rate (%/Yr)		2.50	2.50
Social Discount Rate (%/Yr)		2.50	2.50
Avoided cost of water and wastewater - escalation rate (%/Yr)		1.00	1.00
Environmental benefits - escalation rate (%/Yr)		-	-
Energy cost - escalation rate (%/Yr)		3.00	3.00
<b>STEP 6 Review Results</b>			
Net Present Value - Agency Perspective		(10,001)	(4,751)
Benefit-Cost Ratio - Agency Perspective		0.42	0.61
Net Present Value - Society Perspective		(3,673)	1,577
Benefit-Cost Ratio - Society Perspective		0.80	1.12

## BMP 02 Residential Plumbing Retrofit - Summary of Costs & Benefits

<b><u>Program Present Value Costs</u></b>	<b><u>Agency Perspective</u></b>	<b><u>Society Perspective</u></b>
1. Total devices distributed	300	300
2. Total water savings	5.4 AF	5.4 AF
3. Agency program costs	\$12,100	\$12,100
4. Customer program costs	NA	\$825
5. Cost share	\$0	NA
6. Net Program Cost	<u>\$12,100</u>	<u>\$12,925</u>
<b><u>Program Present Value Benefits</u></b>		
7. Agency supply & wastewater benefits	\$7,349	\$7,349
8. Environmental benefits	\$0	\$0
9. Customer program benefits	NA	\$1,747
10. Other utility benefits	NA	\$5,406
11. Total benefits	<u>\$7,349</u>	<u>\$14,502</u>
<b>12. Net Present Value</b> (Line 11 - Line 6)	<b><u>(\$4,751)</u></b>	<b><u>\$1,577</u></b>
13. Benefit-Cost Ratio (Line 11 ÷ Line 6)	0.61	1.12
14. Simple Unit Supply Cost (Line 6 ÷ Line 2)	\$2,245 /AF	\$2,398 /AF
15. Discounted Unit Supply Cost (Line 6 ÷ discounted water savings)	\$2,327 /AF	\$2,486 /AF

*This BMP is not cost-effective to implement from the Agency Perspective*

*This BMP is cost-effective to implement from the Society Perspective*

BMP C  
System Water Audits, Leak Detection and Repair

**USER DEFINED SCENARIO**

<b>Scenario Name:</b>	blank	BCVWD Baseline
<b>STEP 1 Leak Repair History</b>		
Year system constructed		1900
Average rate of system expansion		1.00
1995 - Miles of Pipe		100
1996 - Miles of Pipe		100
1997 - Miles of Pipe		100
1998 - Miles of Pipe		100
1999 - Miles of Pipe		100
2000 - Miles of Pipe		100
2001 - Miles of Pipe		120
2002 - Miles of Pipe		140
2003 - Miles of Pipe		160
2004 - Miles of Pipe		200
1995 - No. of Leak Repairs		100
1996 - No. of Leak Repairs		110
1997 - No. of Leak Repairs		120
1998 - No. of Leak Repairs		130
1999 - No. of Leak Repairs		140
2000 - No. of Leak Repairs		130
2001 - No. of Leak Repairs		120
2002 - No. of Leak Repairs		110
2003 - No. of Leak Repairs		100
2004 - No. of Leak Repairs		100
1995 - Leak Repair Expenditures		100,000
1996 - Leak Repair Expenditures		100,000
1997 - Leak Repair Expenditures		100,000
1998 - Leak Repair Expenditures		100,000
1999 - Leak Repair Expenditures		100,000
2000 - Leak Repair Expenditures		100,000
2001 - Leak Repair Expenditures		100,000
2002 - Leak Repair Expenditures		100,000
2003 - Leak Repair Expenditures		100,000
2004 - Leak Repair Expenditures		100,000
<b>STEP 2 Water Losses from Leaks</b>		
Avg. water loss from unrepaired system leak		500
Average life of a leak <u>without</u> leak detection program		0.5
Average life of a leak <u>with</u> leak detection program		0.3
System unaccounted water (UW) in 2004		560
Percent UW due to system leaks		30
<b>STEP 3 Cost of Water Losses</b>		
Name of marginal source of supply	Pass Water /	
Avoidable Supply Acquisition Cost		600
Avoided supply capacity expansion costs		696
Total annual chemical costs		65,000
Annual fixed costs for chemicals		
Annual unrelated chemical costs		
Average annual treated water use		8,053
Annual energy costs		747,000
Annual fixed costs for energy		11,500
Annual unrelated energy costs		16,300
Environmental benefit per AF saved		
<b>STEP 4 Cost of Leak Detection</b>		
Cost of leak detection per mile of pipe		750
Agency discount rate		3
<b>STEP 5 Analysis Results</b>		
Annual Cost of Accidental Repair Program in 2005		(1.66)
Annual Cost of Leak Detection & Repair Program in 2005		0.30
Net annual benefit of Leak Detection & Repair Program in 2005		(1.96)

BMP #Ea  
Large Landscape Water Budgets  
Establishment Monitoring

USER DEFINED SCENARIO

Scenario Name: blank BCVWD  
Baseline

**STEP 1 Coverage Requirement**

Year Agency Signed MOU	0
Number of CII Sites with Dedicated Irrigation Meters in 1997	78.00
Number of ETo-Based Water Budgets Already Implemented	-
Number of ETo-Based Water Budgets to Develop	-
Budgets Year 1	20.00
Budgets Year 2	20.00
Budgets Year 3	20.00
Budgets Year 4	18.00

**STEP 2 Program Costs**

Method of Landscape Measurement (Index Value)	3.00
Average No. of Sites Measured Per Year (Index Value)	1.00
Measurement Cost Per Site	175.00
Meas. Cost Radio Button Choice (Index Value)	1.00
Cost to Link budgets to billing or customer notice system	5,000.00
Staff hours to manage budget development tasks	160.00
Staff hourly rate, including overhead (budget development)	35.00
Staff hours to manage budget program	100.00
Staff hourly rate, including overhead (program mgt)	35.00
Percent of Budgeted Sites Receiving Followup Assistance	80.00
Per site followup cost	150.00
Cost Share from Others for Budget Development	
Cost Share for Program Operation	

**STEP 3 Budget Water Savings**

Avg. Annual Use by CII Sites with Dedicated Irrigation Meters	225.00
Avg. Annual Use Per Site (AF)	2.88
Percentage Reduction in Annual Use (%)	15.00
Annual Water Savings Per Site (AF)	0.43

**STEP 4 Agency Benefits**

Avoidable Supply Acquisition Cost	600.00
Avoided supply capacity expansion costs	696.00
Avoided wastewater capacity expansion costs	-
Total annual chemical costs	65,000.00
Annual fixed costs for chemicals	-
Annual unrelated chemical costs	-
Average annual treated water use	8,053.00
Annual energy costs	747,000.00
Annual fixed costs for energy	11,500.00
Annual unrelated energy costs	16,300.00
Environmental benefit per AF saved	-

**STEP 5 Other Benefits and Costs**

Average customer expenditure per budget	3,000.00
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**STEP 6 Discounting Information**

Agency Discount Rate (%/Yr)	2.50
Social Discount Rate (%/Yr)	2.50
Avoided cost of water and wastewater - escalation rate (%/Yr)	1.00
Environmental benefits - escalation rate (%/Yr)	-

**STEP 7 Review Results**

Net Present Value - Agency Perspective	619,874.30
Benefit-Cost Ratio - Agency Perspective	3.42
Net Present Value - Society Perspective	394,084.49
Benefit-Cost Ratio - Society Perspective	1.82

## BMP 05 ETo-Landscape Water Budget Component - Summary of Costs

<u>Program Present Value Costs</u>	<u>Agency Perspective</u>	<u>Society Perspective</u>
1. Total budgets	78	78
2. Total water savings	761 AF	761 AF
3. Agency program costs	\$256,629	\$256,629
4. Customer program costs	NA	\$225,790
5. Cost share	\$0	NA
6. Net Program Cost	<u>\$256,629</u>	<u>\$482,419</u>
<u>Program Present Value Benefits</u>		
7. Agency supply & wastewater benefits	\$876,504	\$876,504
8. Environmental benefits	\$0	\$0
11. Total benefits	<u>\$876,504</u>	<u>\$876,504</u>
<b>12. Net Present Value</b> (Line 11 - Line 6)	<b>\$619,874</b>	<b>\$394,084</b>
13. Benefit-Cost Ratio (Line 11 ÷ Line 6)	3.42	1.82
14. Simple Unit Supply Cost (Line 6 ÷ Line 2)	\$337 /AF	\$634 /AF
15. Discounted Unit Supply Cost (Line 6 ÷ discounted water savings)	\$461 /AF	\$867 /AF
<p><i>This BMP is cost-effective to implement from the Agency Perspective</i>  <i>This BMP is cost-effective to implement from the Society Perspective</i></p>		

**USER DEFINED SCENAI**

<b>Scenario Name:</b>	blank	BCVWD Baseline
<b>STEP 1 Annual Costs Variable Values</b>		
Staff hours to administer the survey program		100.00
Staff hourly rate, including overhead		35.00
Field labor hours		4.00
Field labor hourly rate, including overhead		45.00
Number of surveys		20.00
Unit cost of materials		25.00
Marketing collateral cost		300.00
Advertising cost		100.00
Program evaluation - Labor & Consultant costs		1,000.00
Cost Share from Others		0.00
<b>STEP 2 Customer Water Savings</b>		
Avg. Acres Per Survey		20.00
Avg. Water Use Per Acre		4.00
Reduction in Avg. Use (%)		10.00
Savings Decay (%/yr)		25.00
<b>STEP 3 Agency Benefits</b>		
Avoidable Supply Acquisition Cost	Pass Water	
Avoided supply capacity expansion costs		600.00
Avoided wastewater capacity expansion costs		696.00
Total annual chemical costs		
Annual fixed costs for chemicals		65,000.00
Annual unrelated chemical costs		
Average annual treated water use		
Annual energy costs		8,053.00
Annual fixed costs for energy		747,000.00
Annual unrelated energy costs		11,500.00
Environmental benefit per AF saved		16,300.00
<b>STEP 4 Other Benefits and Costs</b>		
Average customer expenditures per survey		100.00
<b>STEP 5 Discounting Information</b>		
Agency Discount Rate (%/Yr)		2.50
Social Discount Rate (%/Yr)		2.50
Avoided cost of water and wastewater - escalation rate (%/Yr)		1.00
Environmental benefits - escalation rate (%/Yr)		0.00
Energy cost - escalation rate (%/Yr)		3.00
<b>STEP 6 Review Results</b>		
Net Present Value - Agency Perspective		844,814.36
Benefit-Cost Ratio - Agency Perspective		94.87
Net Present Value - Society Perspective		907,456.17
Benefit-Cost Ratio - Society Perspective		83.50

## BMP 05 Large Landscape Surveys - Summary of Costs & Benefits

<b><u>Program Present Value Costs</u></b>	<b><u>Agency Perspective</u></b>	<b><u>Society Perspective</u></b>
1. Total surveys	20	20
2. Total water savings	639.5 AF	639.5 AF
3. Agency program costs	\$9,000	\$9,000
4. Customer program costs	NA	2,000.00
5. Cost share	\$0	NA
6. Net Program Cost	<u>\$9,000</u>	<u>\$11,000</u>
<b><u>Program Present Value Benefits</u></b>		
7. Agency supply & wastewater benefits	\$853,814	\$918,456
8. Environmental benefits	\$0	\$0
9. Total benefits	<u>\$853,814</u>	<u>\$918,456</u>
10. Net Present Value (Line 9 - Line 6)	<b>\$844,814</b>	<b>\$907,456</b>
11. Benefit-Cost Ratio (Line 9 ÷ Line 6)	94.87	83.50
12. Simple Unit Supply Cost (Line 6 ÷ Line 2)	\$14 /AF	\$17 /AF
13. Discounted Unit Supply Cost (Line 6 ÷ discounted water savings)	\$15 /AF	\$18 /AF

*This BMP is cost-effective to implement from the Agency Perspective*

*This BMP is cost-effective to implement from the Society Perspective*

**BMP #F**  
**High Efficiency Washing Machines**

**USER DEFINED SCENARIO**

	BCVWD	BCVWD
	\$300 Rebate	\$100 Rebate

**STEP 1 Annual Costs Variable Values**

Staff hours to administer the rebate program	100	100
Staff hourly rate, including overhead	35	35
Rebate (or utility incentive cost)	300	100
Number of rebates distributed	50	50
Average rebate processing cost (if not included in Admin. Cost	50	50
Marketing collateral cost	500	500
Advertising cost	300	300
Labor & Consultant costs	1,000	1,000
Cost Share from Others	-	-

**STEP 2 Customer Water Savings**

Savings per machine	5,250	5,250
Use CUWCC savings estimate	1	1
Useful Life	10	10
Percent Free-riders	10	10

**STEP 3 Agency Benefits**

Name of marginal source of supply	Pass Water /	Pass Water
Avoidable Supply Acquisition Cost	600	600
Avoided supply capacity expansion costs	696	696
Avoided wastewater capacity expansion costs		
Total annual chemical costs	65,000	65,000
Annual fixed costs for chemicals		
Annual unrelated chemical costs		
Average annual treated water use	8,053	8,053
Annual energy costs	747,000	747,000
Annual fixed costs for energy	11,500	11,500
Annual unrelated energy costs	16,300	16,300
Environmental benefit per AF saved		

**STEP 4 Other Benefits and Costs**

Percent of residential hot water heated with gas	92	92
Percent of residential dryers using gas	78	78
Marginal cost per therm of gas	1	1
Marginal cost per KWh of electricity	0	0
Avoided energy & chemical costs	125	125
Avoided wastewater capacity expansion	900	900

**STEP 5 Discounting Information**

Agency Discount Rate (%/Yr)	2.50	2.50
Social Discount Rate (%/Yr)	2.50	2.50
Avoided cost of water and wastewater - escalation rate (%/Yr)	1.00	1.00
Environmental benefits - escalation rate (%/Yr)	-	-
Energy cost - escalation rate (%/Yr)	3.00	3.00

**STEP 6 Review Results**

Net Present Value - Agency Perspective	(13,477)	(3,477)
Benefit-Cost Ratio - Agency Perspective	0.41	0.73
Net Present Value - Society Perspective	14,025	24,025
Benefit-Cost Ratio - Society Perspective	1.62	2.88

**BMP 06 High Efficiency Washing Machine Rebate Programs -  
Summary of Costs & Benefits \$100 Rebate**

<b><u>Program Present Value Costs</u></b>	<b><u>Agency Perspective</u></b>	<b><u>Society Perspective</u></b>
1. Total rebates distributed	50	50
2. Total water savings	7.2 AF	7.2 AF
3. Agency program costs	\$12,800	\$12,800
4. Customer program costs	NA	NA
5. Cost share	\$0	NA
6. Net Program Cost	<u>\$12,800</u>	<u>\$12,800</u>
<b><u>Program Present Value Benefits</u></b>		
7. Agency supply & wastewater benefits	\$9,323	\$9,323
8. Environmental benefits	\$0	\$0
9. Customer program benefits	NA	\$20,645
10. Other utility benefits	NA	\$6,858
11. Total benefits	<u>\$9,323</u>	<u>\$36,825</u>
<b>12. Net Present Value</b> (Line 11 - Line 6)	<b><u>(\$3,477)</u></b>	<b><u>\$24,025</u></b>
13. Benefit-Cost Ratio (Line 11 ÷ Line 6)	0.73	2.88
14. Simple Unit Supply Cost (Line 6 ÷ Line 2)	\$1,766 /AF	\$1,766 /AF
15. Discounted Unit Supply Cost (Line 6 ÷ discounted water savings)	\$2,017 /AF	\$2,017 /AF
<p><i>This BMP is not cost-effective to implement from the Agency Perspective</i>  <i>This BMP is cost-effective to implement from the Society Perspective</i></p>		

**USER DEFINED SCENA**

**Scenario Name:**

BCVWD  
Baseline

**STEP 1 Annual Costs Variable Values**

Staff hours to administer the survey program	32.00
Staff hourly rate, including overhead	35.00
Field labor hours	4.00
Field labor hourly rate, including overhead	45.00
Number of surveys	4.00
Unit cost of materials	45.00
Consulting Services Cost	1,000.00
Marketing collateral cost	200.00
Advertising cost	25.00
Program evaluation - Labor & Consultant costs	1,000.00
Cost Share from Others	0.00

**STEP 2 Customer Water Savings**

Avg. Water Savings Per Survey	2,500.00
Savings Decay	15.00

**STEP 3 Agency Benefits**

Marginal supply source name	Pass Agency
Avoidable Supply Acquisition Cost	600.00
Avoided supply capacity expansion costs	696.00
Avoided wastewater capacity expansion costs	
Total annual chemical costs	65,000.00
Annual fixed costs for chemicals	
Annual unrelated chemical costs	
Average annual treated water use	8,053.00
Annual energy costs	747,000.00
Annual fixed costs for energy	11,500.00
Annual unrelated energy costs	16,300.00
Environmental benefit per AF saved	

**STEP 4 Other Benefits and Costs**

Other Utility - Wastewater operating costs	125.00
Other Utility - Wastewater capacity costs	900.00
Customer Energy Benefits	10.00
Customer Survey Costs	250.00

**STEP 5 Discounting Information**

Agency Discount Rate (%/Yr)	2.50
Social Discount Rate (%/Yr)	2.50
Avoided cost of water and wastewater - escalation rate (%/Yr)	1.00
Environmental benefits - escalation rate (%/Yr)	0.00
Energy cost - escalation rate (%/Yr)	3.00

**STEP 6 Review Results**

Net Present Value - Agency Perspective	87,682.10
Benefit-Cost Ratio - Agency Perspective	13.10
Net Present Value - Society Perspective	175,016.96
Benefit-Cost Ratio - Society Perspective	22.23

## BMP 09 CII Surveys - Summary of Costs & Benefits

<u>Program Present Value Costs</u>	<u>Agency Perspective</u>	<u>Society Perspective</u>
1. Total surveys	4	4
2. Total water savings	73.4 AF	73.4 AF
3. Agency program costs	\$7,245	\$7,245
4. Customer program costs	NA	1,000
5. Cost share	\$0	NA
6. Net Program Cost	<u>\$7,245</u>	<u>\$8,245</u>

### Program Present Value Benefits

7. Agency supply & wastewater benefits	\$94,927	\$107,854
8. Environmental benefits	\$0	\$0
9. Customer energy benefits	NA	\$8,793
10. Other utility benefits	NA	\$66,615
11. Total benefits	<u>\$94,927</u>	<u>\$183,262</u>
<b>12. Net Present Value</b> (Line 9 - Line 6)	<b>\$87,682</b>	<b>\$175,017</b>
13. Benefit-Cost Ratio (Line 9 ÷ Line 6)	13.10	22.23
14. Simple Unit Supply Cost (Line 6 ÷ Line 2)	\$99 /AF	\$112 /AF
15. Discounted Unit Supply Cost (Line 6 ÷ discounted water savings)	\$111 /AF	\$127 /AF

*This BMP is cost-effective to implement from the Agency Perspective*  
*This BMP is cost-effective to implement from the Society Perspective*

BMP N  
Residential ULFT Replacement Program

USER DEFINED SCENAI

Scenario Name:

BCVWD  
Baseline

**STEP 1 Annual Costs Variable Values**

Staff hours to administer the rebate program	100
Staff hourly rate, including overhead	35
ULFT Cost (or incentive cost) - SF	125
ULFT Cost (or incentive cost) - MF	125
Number of ULFTs (or incentives) distributed - SF	100
Number of ULFTs (or incentives) distributed - MF	25
Average rebate processing cost (if not included in Admin. Cost	50
Marketing collateral cost	500
Advertising cost	100
Labor & Consultant costs	1,000
Cost Share from Others	-

**STEP 2 Customer Water Savings**

Avg. Persons Per Household - SF	3
Avg. Persons Per Household - MF	3
Use CUWCC savings estimate	1
Avg. Savings per ULFT - SF	23
Avg. Savings per ULFT - MF	47
Toilet Natural Replacement Rate - SF	4
Toilet Natural Replacement Rate - MF	4
Percent Free-riders - SF	5
Percent Free-riders - MF	5

**STEP 3 Agency Benefits**

Name of marginal source of supply	Pass Water Agency
Avoidable Supply Acquisition Cost	600
Avoided supply capacity expansion costs	696
Avoided wastewater capacity expansion costs	
Total annual chemical costs	65,000
Annual fixed costs for chemicals	
Annual unrelated chemical costs	
Average annual treated water use	8,053
Annual energy costs	747,000
Annual fixed costs for energy	11,500
Annual unrelated energy costs	16,300
Environmental benefit per AF saved	

**STEP 4 Other Benefits and Costs**

Avoided energy & chemical costs	125
Avoided wastewater capacity expansion	900
Average customer expenditures per ULFT - SF	100
Average customer expenditures per ULFT - MF	100

**STEP 5 Discounting Information**

Agency Discount Rate (%/Yr)	2.50
Social Discount Rate (%/Yr)	2.50
Avoided cost of water and wastewater - escalation rate (%/Yr)	1.00
Environmental benefits - escalation rate (%/Yr)	-
Energy cost - escalation rate (%/Yr)	3.00

**STEP 6 Review Results**

Net Present Value - Agency Perspective	44,521
Benefit-Cost Ratio - Agency Perspective	2.65
Net Present Value - Society Perspective	85,240
Benefit-Cost Ratio - Society Perspective	3.19

## BMP 14 ULFT Replacement Programs - Summary of Costs & Benefits

	Agency Perspectiv e	Society Perspective
<b><u>Program Present Value Costs</u></b>		
1. Total ULFTs distributed	125	125
2. Total water savings	59.9 AF	59.9 AF
3. Agency program costs	\$26,975	\$26,975
4. Customer program costs	NA	\$11,875
5. Cost share	\$0	NA
6. Net Program Cost	<u>\$26,975</u>	<u>\$38,850</u>
<b><u>Program Present Value Benefits</u></b>		
7. Agency supply & wastewater benefits	\$71,496	\$71,496
8. Environmental benefits	\$0	\$0
9. Other utility benefits	NA	\$52,594
10. Total benefits	<u>\$71,496</u>	<u>\$124,090</u>
11. Net Present Value (Line 10 - Line 6)	<b>\$44,521</b>	<b>\$85,240</b>
12. Benefit-Cost Ratio (Line 10 ÷ Line 6)	2.65	3.19
13. Simple Unit Supply Cost (Line 6 ÷ Line 2)	\$450 /AF	\$648 /AF
14. Discounted Unit Supply Cost (Line 6 ÷ discounted water savings)	\$581 /AF	\$836 /AF
<i>This BMP is cost-effective to implement from the Agency Perspective</i> <i>This BMP is cost-effective to implement from the Society Perspective</i>		

14-2.1 WRITTEN NOTICE – Any person found to be violating any provision of these Regulations will be notified as provided for in Subsection 7-1 excepting when immediate discontinuance of service is required as provided for in said subsection.

14-2.2 CORRECTIVE ACTION – Upon being notified by the District of any defect arising in any connection to a service connection or of any violation of these Regulations, the person shall immediately take whatever corrective action may be necessary.

14-3 PUBLIC NUISANCE – Continued habitation of any building or continued operation of any industrial facility in violation of the provisions of these Regulations is hereby declared to be a public nuisance. The District may cause proceedings to be brought for the abatement of the occupancy of the building or industrial facility during the period of such violation.

14-4 Discontinuance of Service – The District may discontinue service as provided for in Section 7-1.

## ***PART 15 – WATER CONSERVATION RULES AND REGULATIONS***

15-1 PROHIBITION OF WATER WASTER – No person, firm, or corporation shall use, deliver, or apply waters received from this District in any manner that causes the loss, waste, or the applications of water for unbeneficial purposes. Within the meaning of this Regulation, any waters that are allowed to escape, flow, and run into areas which do not make reasonable beneficial use of such water, including but not limited to streets, gutters, drains, channels, and uncultivated lands, shall be presumed to be wasted contrary to the prohibitions of these Rules and Regulations.

1) Upon the first failure of any person, firm, or corporation to comply, this District shall serve or mail a warning notice upon any person determined to be in violation of these Rules and Regulations.

2) Upon the second failure of any person, firm or corporation to so comply, the water charges of any such consumer shall be doubled until full compliance with these Rules or Regulations has been established to the satisfaction of the Board of Directors of the District.

3) Upon the third failure of any person, firm, or corporation to so comply, the District shall terminate water service to any connection through which waters delivered by the District are wasted in violation of these Rules and Regulations.

15-2 Where feasible, as determined by the District Engineer, commercial/industrial developments shall be required to implement an on site recycling/reclamation system.

15-2.1 Costs associated with engineering, construction, etc... shall be borne by the developer.

15-3 ENFORCEMENT – It shall be the duty of the Board of Directors and all employees to enforce these rules and Regulations, and for such purpose and shall be

permitted to inspect any premises receiving water from the District at any reasonable hour.

15-4 VARIANCES – in order to prevent or lessen unnecessary hardship or practical difficulties in exceptional cases, aggrieved persons may file a written application for a variance with the Board.

The Board may grant such variance only when unusual hardship will result from the strict application of this ordinance.

#### ***PART 16 – VALIDITY***

If any portion of these Regulations or the application thereof to any person or circumstance is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of these Regulations or the application of such provision to other persons or circumstances.

The Board hereby declares it would have passed these Regulations, and portions thereof, irrespective of the fact that any one or more portions be declared unconstitutional.